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Acquisition Management

FACTFINDING & TECHNICAL EVALUATIONS

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This ASC pamphlet has been prepared to tell you, the technical evaluator, the general information you will need in order to prepare a quality technical evaluation. This pamphlet is focused strictly on the evaluation of sole source proposals, such as new sole source contracts or engineering/contract changes. Technical evaluations of competitive proposals have different requirements which are governed by various source selection rules and procedures.

Chapter 1

INTRODUCTION

1.1. This pamphlet is written with the recognition that technical people have varying priorities conflicting with the task of writing technical evaluations. Technical evaluations are essential for the negotiation of a fair and reasonable contract. Training in this area has been mainly on-the-job training with differing approaches, varying expectations and many new trainees. With this in mind, this pamphlet has been prepared to be quick and easy to read, to provide helpful uniformity and to be a ready-to-use training aid.

1.2. What is a technical evaluation? A technical evaluation is an assessment of the effort a contractor has proposed to accomplish future contract requirements. *This is not an evaluation of dollar amounts but rather of the information behind the dollar amounts, such as the number and kinds of labor hours, number of computer hours, number of trips and quantities/kinds of materials proposed.* Once technical evaluations are complete, then labor rates, overhead rates and other inputs are applied by pricing or contracting personnel to generate the Government's cost objective and negotiation strategies.

1.3. Why are technical evaluations required? The actual requirement for technical evaluations is in the Federal Acquisition Regulation (FAR). FAR 15.404-1 requires *cost analysis* with every negotiated procurement action when cost or pricing data is required, which is for all proposals over $500,000. Even below this amount, you may be asked to prepare a technical evaluation so that your contract negotiator will have a technical basis for negotiations. Cost analysis is an evaluation of the separate cost elements, which make up the final price. Technical evaluations are usually needed for this analysis. To do cost analysis, it is necessary for the contractor to include adequate supporting cost data in their proposal. The Government must then document the analysis of the contractor's data to support its negotiation objective and the final negotiation results. This documentation is to make sure that a reasonable price is negotiated.

1.4. What are other technical benefits? Beyond supporting negotiations, real technical benefits can be derived by being involved with the evaluation process. This process provides you with an excellent opportunity to verify that the contractor understands our technical requirements and that you understand the contractor's plan for meeting those requirements. This insight will significantly assist you in knowing that our technical requirements are understood and provides you with much of the background you will need to monitor contractor performance after contract award.

1.5. Where do technical evaluations fit into the overall acquisition process? A contractor's proposal is normally submitted in response to a Request for Proposal (RFP) which states the Government's requirement. For Engineering Change Proposals (ECPs), proposals are submitted in response to an Advance Change Study Notice (ACSN) or other request. Once a proposal is received and distributed to various technical team members, the evaluation process begins. Normally, additional information is needed to understand the contractor's proposed cost. To gain this understanding, the evaluators formulate questions and address them to the contractor. The contractor provides the needed data. This process, which may take the form of face-to-face meetings, telecons or written correspondence, is known as factfinding. Based on initial proposed data, follow-on explanation and additional data, technical evaluations are prepared and submitted. They are used by contracts and pricing personnel as the basis for calculating negotiation objectives and planning negotiation strategies. The objective is then approved through a process called business clearance. Contracts and pricing personnel are responsible for business clearance but you

may be asked to assist. Following business clearance, negotiations begin. During negotiations, technical personnel are normally required to discuss and defend their technical positions. After negotiations are complete, contract documents and files are completed and reviewed. Finally, the contract or modification is awarded.

1.6. What is Integrated Product Team (IPT) Pricing? Integrated Product and Process Development (IPPD) evolved in industry as an outgrowth of efforts such as Concurrent Engineering to improve customer satisfaction and competitiveness in a global economy. In May 1995, consistent with the Department of Defense (DoD) efforts to implement best commercial practices, the Secretary of Defense directed "a fundamental change in the way the Department acquires goods and services. The concepts of IPPD and Integrated Product Teams (IPTs) shall be applied throughout the acquisition process to the maximum extent practicable." The use of a joint Government/Contractor Integrated Product Team (IPT) approach for developing proposals, pricing, and negotiating contracts has evolved considerably over recent years. As evidenced in a 23 June 97 Acquisition Executive Memorandum, this IPT approach has now become the *expected* method for pricing and negotiating sole source acquisitions.

1.7. What is a should-cost analysis? Should-cost analysis is a specialized form of cost analysis that is used to evaluate the cost of production programs by evaluating and challenging a contractor's management and operating systems. It does not assume the use of the contractor's existing workforce, methods, materials, facilities or management and operating systems. It is looking at better ways for a contractor to do things, such as different plant rearrangement or different "make or buy" decisions. It is accomplished by an integrated team of Government contracting, contract administration, pricing, audit and technical representatives. While some of the information in this pamphlet will be helpful if you are involved in a should-cost, this pamphlet is not oriented for a should-cost. A good should-cost reference is FAR 15.810 and its supplements.

1.8. What is the role of technical evaluations when certified cost or pricing data is not provided? As stated in section 1-3, technical evaluations are required by FAR when cost or pricing data are provided. The Federal Acquisition and Streamlining Act (FASA) of November 1994 emphasizes commercial practices. The FAR (15.402) now states that a contracting officer (CO) shall use every means available to ascertain a reasonable price prior to requesting cost or pricing data. These alternative methods are based on using competitive/comparative market and catalog pricing information as a basis for price analysis and negotiations. Although price analysis and negotiations usually will not provide information such as profit, hours or material cost, the CO may still request the assistance of technical advisors in such areas as:

1.8.1. Technical differences between the proposed item and similar previously sold items. This should include complexity, different features, size and weight, environment where used and any other characteristics.

1.8.2. Potential price impacts of any changes in industry practices or manufacturing methods.

1.8.3. Potential savings from any component breakout.

1.8.4. Information on any similar items recently purchased.

1.8.5. Sources of additional price related information such as the DCAA, DCMA, Trade Journals, Government databases, or other manufacturers.

1.9. The role of the technical evaluator can change significantly under FASA. The focus changes from cost analysis to a pricing reasonableness based on previous sales. The amount of profit is not a consideration when you are only concerned with the total price of an item or effort. The key point to remember is that while the methods are somewhat different than before FASA, the goal to negotiate a reasonable price is unchanged.

Chapter 2

THE PROPOSAL

2.1. Why is there so much variation between different proposals? Every contractor is unique with different facilities and equipment, different methods of charging labor, and different types and levels of labor. If you become familiar with one contractor's organization and estimating practices, it can be very frustrating to evaluate a new and different organization. You are not alone in your frustration, but there is no easy solution. In order to provide a thorough evaluation of the proposal you will have to read it carefully and ask questions. It is essential that you understand what the contractor is proposing.

2.2. What basic similarities exist between proposals?

2.2.1. The ultimate product of all proposals is a price for a task and rationale as to where that price came from. The task is generally in the form of Government requirements [Statement of Work (SOW), Contract Data Requirements List (CDRL), Specifications, Contract Provisions, etc.].

2.2.2. Proposals are generally organized or subdivided into smaller units in accordance with a program's Work Breakdown Structure (WBS). The WBS is an organized way to describe a product in logical subdivisions from the highest system level down through as many levels as it takes to identify subcomponent levels. These lower levels become the elements of work that you will see proposed. A matrix in the proposal correlates the WBS to SOW requirements to help evaluators understand the relationship between the WBS and SOW. This matrix also helps evaluators look for duplicate tasks and subtasks. This concept of WBS and SOW correlation is not easily described or understood. This paragraph attempts to introduce this subject but you may not grasp it until you start working with a proposal. Several WBS references are listed in Chapter 6.

2.2.3. Once high level tasks are broken down, the contractor will estimate effort (man-hours) and materials needed to complete these tasks. Some contractors call this product "task descriptions" others call them "rationale" or "basis of estimate." This is the part of the proposal that calls for a careful analysis by the evaluator.

2.2.4. The rest of the proposal is then a build up of all the smaller tasks feeding into larger tasks. Hourly rates, overhead rates, material costs, etc. are multiplied times the various man-hours and indirect cost bases to form the cost estimates.

2.3. Is the proposal the same in the IPT pricing environment? Yes and no. At the beginning of the IPT process, you may be evaluating draft detailed proposal rationale that is not summarized and fully priced. The whole idea in IPT pricing is to get involved early, even concurrently, in the development of the product. In this case the product is the final proposal submitted to the government customer for negotiation.

2.3.1.The final proposal the government receives from the contractor must still conform to normal proposal requirements for accuracy and currency. The use of a teaming concept for the development of proposals and the subsequent negotiation of contracts does not in and of itself relieve the contractor of its legal responsibility to submit certified cost and pricing data. It also does not provide the contractor with any other legal or regulatory relief.

Chapter 3

PROPOSAL ANALYSIS

3.1. How do you know if the hours are reasonable? Proposal analysis is the process of familiarization and preliminary analysis. In order to determine if a proposal is reasonable, it must be evaluated item by item. This chapter addresses quantitative evaluation techniques while Chapter 4 focuses on proposal analysis through an interaction with the contractor.

3.2. The following is a FIVE-STEP STRUCTURED APPROACH to evaluating a proposal (or just your part):

- Read and understand the Contractor's proposal.
- Review the rationale to assure it is within scope and proper decisions and alternatives are applied (technically sufficient).
- Make sure the estimating methodologies and rationale are properly applied, and there are not duplications.
- Evaluate detailed estimates, calculations, and factor applications.
- Identify areas for improvement.

3.3. Formulate and write down any questions as you go through a proposal using this approach. You'll need the questions for Chapter 4. Let's discuss each step in this approach:

3.4. Step 1 – Read and Understand the Contractor's Proposal: You are instructed to evaluate the engineering hours on proposal XYZ. What do you do?

3.4.1. First, see the forest. Find the proposal functional cost summary (also called cost element summary). The proposal functional cost summary is the page(s) that summarizes the major elements of cost and profit to the total proposed price. It usually includes a summary of hours for each labor area. This very important first step identifies the total amount of hours proposed that you must evaluate in forming your recommendations. However it's done, verify your total to be reviewed against some proposal amount.

3.4.1.1. Occasionally, your task will be easier because someone will tell you what specific hours or proposal pages you're to evaluate. On large proposals involving several evaluators, it is critical that all evaluators understand who is responsible for certain sections of the proposal. Contracts and pricing personnel usually detail the initial proposal breakdown. Technical chiefs may break their overall areas down further. WBS or the department of the contractor should break these out. Many times assumptions are made that someone else is reviewing a particular section, when in fact, no one is.

3.4.2. Next for your area of technical review, say Engineering, find the engineering detail or departmental breakout of those hours. The total should match the total hours in the functional cost summary. Spend time absorbing how the proposed total is broken into task or departmental estimates.

NOTE:

The term "Cost" is used in this pamphlet generically to refer to all estimating inputs. Labor costs are caused by multiplying labor hours by labor rates. Your task is to evaluate the hours portion of those "costs."

3.4.3. To complete your understanding of the proposal, locate and review (should probably also tab) all the supporting data for all the tasks or departmental estimates you're reviewing.

3.4.4. Once you've completed the above three steps properly, you will begin to have a feel for how your end product, the technical evaluation, will look.

**A general rule: Provide recommendations against a proposal in the same format as the proposal is summarized.* A pictorial view of understanding the proposal and how that will flow to your technical evaluation is presented in figure 3-1.

3.5. Step 2 - Review the rationale to assure it is within scope and technically sufficient.

3.5.1. Review your proposal against the Statement of Work (SOW). Though it is probably very long, a thorough skim of the SOW's structure and general content are essential to good proposal analysis. The main reason for large exceptions to proposals is usually differing perceptions of SOW requirements. Assure all proposal tasks relate to the SOW, and do not exceed its scope.

3.5.2. Also, review the proposal for sufficiency. This means reviewing the proposal to see if the work plan is technically sound. There are many checklists to help you do this in detail, but in general, you're looking to assure that the proposed effort will get the desired product. Areas such as need and availability of test equipment or GFP, subcontracting plans, and resolution of technical issues, are reviewed for adequacy. This pamphlet focuses less on this technical assessment and more on quantitative hours evaluation.

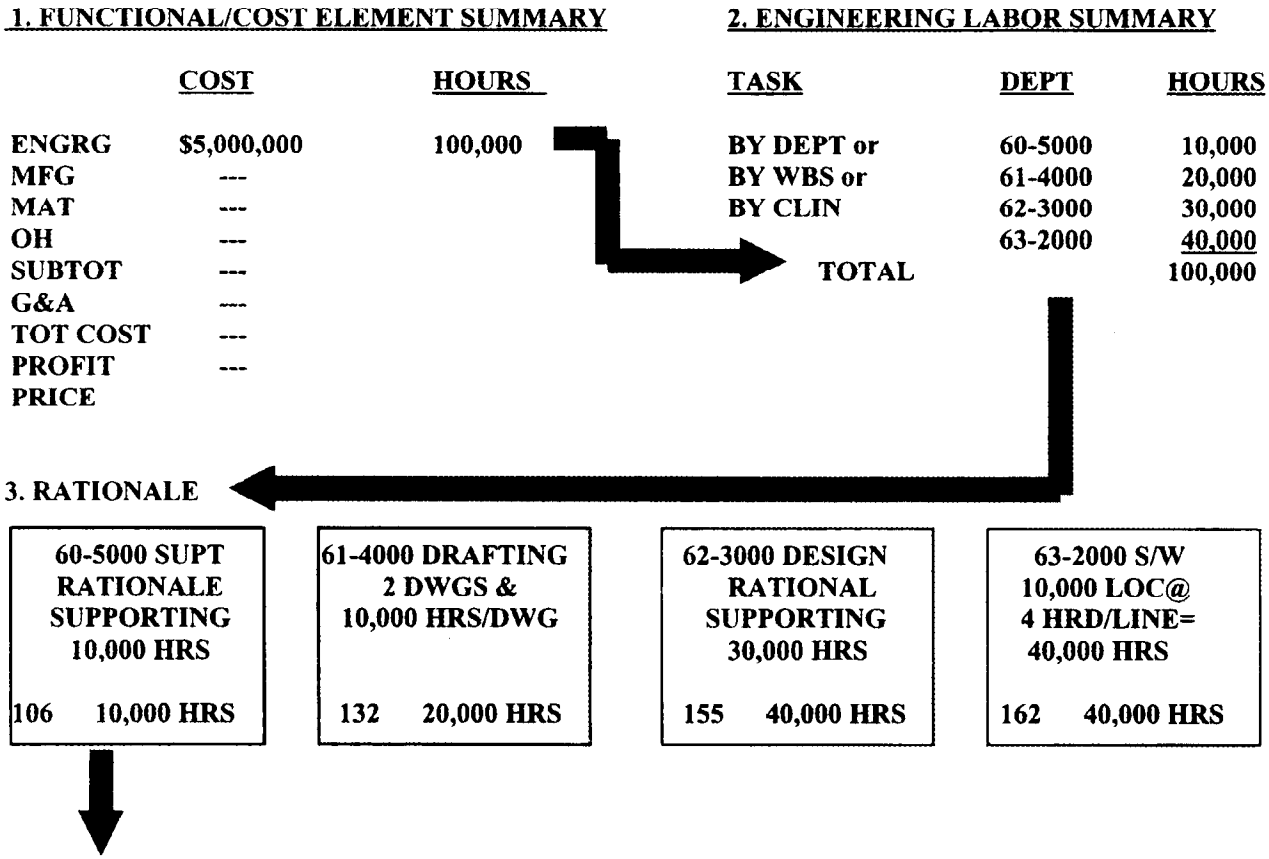
3.6. Step 3 - Make sure the estimating methodologies and rationale are properly applied, and there are no duplications.

3.6.1. Estimating Methodologies - The term "methodology" refers to the method, or logic, that the contractor used to develop the proposed hours. The type of methodology used is determined by what data was available to the contractor and what detail was required. Two of the main estimating methods are comparisons and grass roots.

3.6.1.1. Comparisons

3.6.1.1.1. One form of comparison is called the "parametric" method of estimating. It is normally utilized at the early stages of a program, when there is limited program and technical definition and time available. Parametrics involves collecting historical system (such as weight, number of components, or size) and related labor hour or material data at a high level. A statistical relationship is established between the system and historical data. Projections are made based on a new system's weight, size or number of components. An example would be how many manufacturing hours per pound it takes to build airframes.

Figure 3.1. Pictorial of Proposal and Technical Evaluation Flow.



DEPT	PROPOSED	AF RECOMMENDED MINIMUM	MAXIMUM	REF	PG
60-5000	10,000	9,000	10,000	1	106
61-4000	20,000	10,000	15,000	2	132
61-3000	30,000	30,000	30,000	3	155
63-2000	40,000	0	0	4	162
	100,000	49,000	55,000		

EXPLANATION
1. BASED ON JUDGMENT. OUR JUDGMENT MIN 1,000 TOO HIGH.
2. DATA SUPPORTS ONLY 7,500 PER DWG MAX.
3. ACCEPTED AS PROPOSED.
4. NO SOFTWARE THIS EFFORT. DELETED ALL HOURS.

3.6.1.1.2. When a more detailed estimate is desired, other comparative methods are used. The basis for making comparative projections takes into consideration that there are no totally new programs. Most "new" programs originated or evolved from already existing programs or simply represent a new combination of existing components. This method of estimating uses this idea as a foundation for estimating new components, subsystems, or total systems. Simply stated, it uses actual data of a similar, existing or past program, and adjusts for complexity, technical, or physical differences to derive the new estimate.

3.6.1.1.3. Grass Roots: Also called a "detailed estimate" or "engineering buildup." A grass roots estimate would utilize individual managers' inputs to come up with total hours. The key is each function develops their estimate to do that job based on some historical or projected analysis or judgment. The total is the sum of all those functional estimates.

3.6.1.2. There are many variations on the two main methods just described:

3.6.1.2.1. Judgment - Direct estimating or specialist estimating is a judgmental estimate performed by an expert in the area to be estimated. This methodology is limited by the availability of "expert" judgment and the credibility of that judgment. This approach is best used as a crosscheck against an existing estimate or in combination with other methodologies.

3.6.1.2.2. Manloading - Estimating the number of people required to do a job and for how long and converting that into a man-hour bid.

3.6.1.2.3. Industrial Engineering Standards (IES) - A standard hours estimate is developed by summing the standard hours for each operation required to build the product. A standard hours estimate represents the optimum time required to produce the product. A realization factor is applied to the IES estimate to account for the reality of learning, lot sizes, process and human inefficiencies.

3.6.1.2.4. Estimates-at-Completion (EACs) - If work has begun on an effort, the actual amount (man-hours, material, etc.) expended to accomplish the amount done is the best basis to project what it will require to complete the project. Adding this required amount to the actual cost expended provides an EAC.

3.6.1.2.5. Learning/Cost Reduction Curves - This method of estimating is based on the expectation that as more units are built, man-hours will be reduced in a regular and patterned manner.

3.6.2. Making sure the methodologies are properly applied could take the form of any of the following:

3.6.2.1. Parametric - A contractor is building a new composite airframe. They are using parametric hours per pound data from previous metal/aluminum airframe programs. You should question the applicability of this parametric bid as it is based on a heavier airframe since metals are generally heavier than composites and the manufacturing processes are very different. Have the contractor verify the applicability, or use your judgment to adjust the parametric outcome.

3.6.2.2. Other Comparisons - A contractor is developing and building a 1.2 Meg 12 MHz processor as an avionics component. It is replacing the 12-year-old 256k .5MHz processor originally installed in the Black Box. Hours are bid based on the ratio of the memory capacity (1.2 Meg/ 256K = 6 and 12MHz/.5MHz = 24). The contractor asserts that since it took 10,000 hours per unit before, they should bid between 6 and 24 times the 10,000 hours previously incurred and justifies

these multipliers as complexity factor. You should question the use of these complexity factors and have the contractor justify them since 256K and .5Hz may have been state of the art 12 years ago, but 1.2 Meg and 12MHz are hardly that today.

3.6.2.3. Judgment - It is not always expected that the Air Force evaluator disagree with the contractor but anytime a contractor uses solely their judgment as a basis, you are free to use your judgment as a counter. Probe this judgement estimate extensively. Whenever possible, try to get the contractor to provide another basis for the estimate.

3.6.2.4. Standards - For a production effort, this is one of the preferred methodologies. Check to see if the contractor is properly applying realization/efficiency based on some improvement goal.

3.6.2.5. Manloading - Conversion to hours should be similar to:

	Direct Hours Per "Man-year"
52 Weeks X 40 Hours/Week	2080
Vacation	(80- 120)
Sick Leave, Admin & Holidays	(80- 120)
Net Direct Man-hours	1840- 1920

The direct man-hours per man-year varies by contractor. Unless you're provided more specific recommendations use 1840 to 1920 direct labor hours per man-year. Do not pay the entire 2080 hours as direct because the vacation, sick, administrative leave, and holidays come out of fringe or other overhead accounts. Also, make sure the contractor does not duplicate by bidding a manload and then bidding some other discrete task on top of that. The manloaded hours could be enough to handle the entire job. If you find this in your proposal, question the use of both discrete task bidding and manloading.

3.6.3. Summary on Methodologies Applied:

3.6.3.1. You don't have to memorize any definitions or questions. Take a general approach of *"DOES THIS MAKE SENSE. " You* don't need to have a lot of years experience to ask and answer that question. When a contractor has bid something logically and fairly, you get the sense that it's ok. But, if after they explain it, you still don't understand why the number is what the number is, don't be afraid to throw up the red flag. The Air Force Team is counting on you to do just that.

3.6.3.2. Keep this thought in mind: *Adequate rationale is that which allows an informed reviewer to understand the thought processes the author had for developing their position.* Rationale tells you, what is to be done, how much time it takes, and why. You may not agree with how the author supports their position but you must be able to understand it. If you don't understand their approach, the problem is probably the approach, not you!

3.7. Step 4 - Evaluate detailed estimates, calculations and factor applications.

3.7.1. Detailed estimates:

3.7.1.1. There are a few sources of reference data to assist you in determining if an amount proposed for say a drawing, a computer program, or a certain learning curve is a "reasonable" or normal amount. The ASC Cost Data Library (ASC/FMCR, Building 16, Room 116) stores some learning curve data from most major production programs.

3.7.1.2. There are also some learning curve programs, which can assist you in making various types of calculations and graphic plots. Learn and Iclot are examples, and most analysts in Pricing, ASC/PKF, have access to these. In the last few years some software estimating models have been developed. Examples are:

3.7.1.2.1. Constructive Cost Model (COCOMO), with variations REVIC and COCOMO II

3.7.1.2.2. Software Life Cycle Management Model (SLCM)

3.7.1.2.3. Hardware and Software Cost Estimating Model (PRICE H&S), by Lockheed Martin-Price

3.7.1.2.4. Factor Application: Your evaluation of the proposal's detailed estimates should also verify that factors used for estimates are good factors and that they are properly applied. Certain factors may have been previously agreed to by the local Defense Contract Management Agency (DCMA) personnel, and you should avoid wasting time evaluating those factors. Previously agreed to factors are documented and your contracts or pricing personnel should be able to identify them. Support labor categories are normally proposed using some factor applications. First, find out what the basis or validity of the factor is. Next make sure the current proposal's use of the factor is consistent with the manner in which the factor was developed. This means making sure the base and pool (denominator and numerator of the factor or ratio) in the proposal are defined the same as the base and pool used in the historical data when the factor was developed. If not, you may want to recommend another estimating technique. Review the example in figure 3.2:

Figure 3.2. Factor Example.

*Estimating Using Factors
Manufacturing Engineering Support
Bid Hours15,625
Methodology:
12.5% * 125,000 Total Prod Hours (Includes 0ffsite) = 15,625 Mfg Engrg Support hours
Support:
CY 1988, W.0.#0576 - Mfg Engrg Hours - 22,150
(Pool)
CY 1988, W.0.#0571 - In-house Factory Hours - 177,200
(Base)
22,150/177,200= 12.5%
You should question the use of the entire 125,000 total production hours as a base because it includes offsite labor. The support data says the 12.5% factor is developed using a base of in-house labor only. Your recommended amount should be approximately 12.5% * (125,000 - offsite labor).

3.8. Step 5 - Identify Areas for Improvement:

3.8.1. It is important to remember that the proposal's purpose is to identify how things will be/should be done, not how they were done. It is okay, even necessary, for you to go through the proposal and make judgments like:

3.8.1.1. Maybe it took the contractor 3,000 hours before, but 2,000 should do this time. They're smarter.

3.8.1.2. The contractor's historical data for hours per drawing is not indicative because of the productivity improvements offered by the new virtual reality system.

3.8.1.3. That support factor is too high. We were in prototyping then. We're in production now.

*It's your job to find these kinds of anomalies and derive some logical and supportable alternatives. How is that done? Well, perhaps the process of factfinding (Chapter 4) will provide the answers.

3.9. Proposal Analysis in the IPT environment

3.9.1. The factors that determine the quality of a good estimate are constant regardless of the approach. All the items in paragraph 3.1 still apply. However, the point at which proposal analysis begins in an IPT environment is initially less definable since there is not a clear submittal of a formal proposal. Further blurring the starting line for proposal analysis in an IPT is discussions at the functional level are allowed, even encouraged, prior to preparation of detailed rationale. Because an emphasis of IPT pricing is the *early* resolution of problems, it follows that SPOs must plan for the *early* participation of all team members. Cost and related contract issues are generally driven by decisions made early in the process (i.e. scope of effort, schedule, contract type, estimating assumptions, etc.). As such it is important that team members having a stake in subsequent issues be participants in laying this groundwork..

*As it is difficult to determine when proposal analysis begins in IPT pricing, it is also a challenge to make the decision that proposal analysis has ended and we've moved on to factfinding, the topic of our next chapter.

Chapter 4

FACTFINDING - MAKING IT EFFECTIVE

4.1. Factfinding (FF) is that portion of the contracting process where the Government seeks to gain a complete understanding of the proposal and identify specific areas of concern. FF is that juncture where you provide the contractor an opportunity to explain why the methods and amounts proposed are different than your proposal analysis perceptions. This is usually done face-to-face at the contractor's plant (for larger efforts) or by telephone.

4.2. Keys to successful factfinding: A. There are two keys to having success in FF. *The first is preparation--administratively and technically. The second is your personal approach-how you handle yourself and your interview.*

4.2.1. Administrative Preparation:

4.2.1.1. Usually you'll be factfinding as part of an entire negotiation team. There are a myriad of administrative details that should be addressed relative to people, places and times. These details must be properly addressed to assure you get to the place of your factfinding on time, and that the people there (both contractor and Government) are prepared to support you. Take nothing for granted. The more time you put into planning in advance, the less you'll waste during the actual FF process.

4.2.2. Technical Preparation:

4.2.2.1. Most important, you must be technically prepared. Preparation is thorough proposal analysis. It's no coincidence that Chapter 3 (Proposal Analysis) is the longest of this pamphlet. *Nothing makes up for not being prepared and being prepared can make up for a lot.* Being prepared means doing your advance homework. You'll feel prepared when:

4.2.2.1.1. You're thoroughly familiar with the proposal. Your proposal is tabbed for easy access and you know where things are.

4.2.2.1.2. Based on using the Chapter 3 approach, you have documented pages of FF questions. You could submit these in advance so the contractor has time to prepare answers.

4.2.2.1.3. You know the proposal and FF questions so well, you can concentrate on the answers you hear and properly judge their validity.

4.3. Factfinding Suggestions:

4.3.1. Do:

4.3.1.1. Identify, and prioritize discussion items/concerns.

4.3.1.2. Be thorough and methodical--don't jump around.

4.3.1.3. Ask for the person who made the estimate to be present.

4.3.1.4. Make sure the contractor representative is speaking for the company (but be aware, this is not always possible).

4.3.1.5. Involve all personnel who can contribute to the discussion - let them do the talking - others listen.

4.3.1.6. Probe and question until you are satisfied with the response.

4.3.1.7. Draw basis of the contractor's estimate out into the open.

4.3.1.8. Establish action items or issue inquiries if contractor doesn't answer.

4.3.1.9. Listen for duplicate task and subtask discussions.

4.3.1.10. Keep notes, possibly minutes.

4.3.1.11. Document all pertinent findings/concerns.

4.3.1.12. Call an AF caucus, if needed, to review what has been learned, to think up new questions, to consult with other team members.

4.3.2. Do Not:

4.3.2.1. Reveal your specific findings or numbers to the contractor.

4.3.2.2. Negotiate or reach agreements on if or how to do a task.

4.3.2.3. Answer questions other evaluators ask of the contractor.

4.3.2.4. Argue with the contractor over what has been done in the past. (Argue is the key word here. Further clarifying discussions are encouraged.)

4.3.2.5. Let contractor gloss over questions--make them answer.

4.3.2.6. Coach or put words in the contractor's mouth.

4.3.3. Generic Opening Questions:

4.3.3.1. How was this estimate developed?

4.3.3.2. What is to be accomplished under the effort or tasks described in page or paragraph?

4.3.3.3. When will it be completed?

4.3.3.4. Who (by name/desk/section) will do it?

4.3.3.5. What will result from this task?

4.3.3.6. Why do you need to do this or do it this way?

4.3.3.7. What will happen if this task is not done?

4.3.3.8. How does this task relate to the SOW, SPEC?

4.3.4. About FF Questions:

4.3.4.1. There is no such thing as a dumb question.

4.3.4.2. You may think you know, but ask to be sure.

4.3.4.3. Questions are a point of departure.

4.3.4.4. One question leads to another.

4.3.4.5. Responses provide direction.

4.3.4.6. Start with the simple questions first.

4.3.4.7. Complicated questions result in complicated answers.

4.3.4.8. Short, simple questions are easily understood and are more difficult to evade.

4.4. Effective Interview Elements. There are three components to an effective interview: an opening, middle or a body, and a closing.

4.4.1. Opening.

4.4.1.1. Identify yourself.

4.4.1.2. Establish rapport.

4.4.1.3. State Purpose and Background Information.

4.4.2. Middle or Body.

4.4.2.1. Maintain confidence.

4.4.2.2. Be professional and relaxed.

4.4.2.3. Question with discretion.

4.4.2.4. Maintain control.

4.4.2.5. Clear questions.

4.4.2.6. Assess response validity.

4.4.2.7. Take notes sensibly.

4.4.2.8. Observe interviewee's behavior.

4.4.3. Closing.

4.4.3.1. Clarify and summarize.

4.4.3.2. Express appreciation.

4.4.3.3. Terminate or reschedule.

4.5. Documentation: Your contract people will generate tracking and handling procedures for all documentation involved with factfinding. Initial factfinding questions which are sent to the contractor need to be tracked and maintained as well as any written answers. These will be included in the official contract file. Documentation generated during factfinding will also be tracked and included in the official contract file.

4.6. Is Factfinding in an IPT Environment Different?

4.6.1. Paragraph 4.2 pointed out the two keys to successful factfinding are administrative planning and technical preparation. This is even truer in an IPT situation. From an administrative perspective, a lead government technical coordinator or focal point should be established to assure an integrated approach to agreements on the work statement as well as the associated costs. On the technical side, each technical evaluator must make quantitative value judgement decisions, instead of just recommendations for someone else to negotiate later. As a result, the responsibility and the scope of factfinding has probably increased.

4.6.2. Remember back in paragraph 3.2, we discussed the vagueness of beginning and ending proposal analysis in the IPT environment. Such is also true about the beginning and ending of factfind-

ing. In actuality, it can be said that factfinding does not end until the proposal is negotiated. For this reason there is almost no difference in the task to be performed, especially from the perspective of the technical evaluator. At the beginning of the IPT process, you may be evaluating a draft proposal versus a final version, but the questions asked are still the same.

4.6.3. Not all team members will have the same experience or skill levels, including negotiating skills. Also, an individual team member may not always be aware of potential duplications or inconsistencies that may exist with another functional area. Throughout the process coordination through a technical focal point, as well as with the PCO and price analyst, is critical to achieving an overall fair settlement.

4.6.4. Working with the contractor in a team environment does not mean that the government members should not challenge cost estimates that appear to be unreasonable. The team members are encouraged to rigorously scrub costs, but to do so in a professional way, attempting to reach consensus with the contractor rather than confrontation. To reach a fair agreement on costs, it is important that proposed costs for a given task be understood in relationship with other efforts within the program. Often, costs in one area are dependent on the contractor's approach in a related area. In those cases where mutual agreement on costs cannot be reached at the working level, some process for smoothing and moderating these differences should be established. Every attempt should be made by team members to reach consensus within the team (including the contractor members), rather than leaving the issue for management to resolve.

Chapter 5

TECHNICAL EVALUATION REPORT

5.1. Structure:

5.1.1. The summarization of your findings from proposal analysis and factfinding is called a *technical evaluation report.* Though the format for technical evaluations vary upon the type of proposal, degree of exception to that proposal, and author's preference, a tech eval (for short) should include most of the following elements:

5.1.1.1. A summary paragraph briefly describing the work proposed or any unique cost or technical aspects.

5.1.1.2. A summary of the proposed hours you evaluated.

5.1.1.3. A summary (in the same format as [2.] above) of the hours you are recommending.

5.1.1.4. Explanation for all disallowed hours with proposal page number references.

5.2. Content:

5.2.1. Your tech eval should be prepared with clarity, traceability and thoroughness as priorities. Remember, the customer of your report is not as technically trained or familiar with the subject matter, so clearly explain technical issues. The Pricer or Buyer negotiating the procurement action has numerous cost areas, other evaluations and audits to consider. Also, consider that your report may be the basis for telling a contractor that they really need less than they're asking for. Contractors don't take that lying down. They normally challenge our counteroffers. Our best defense is sound, well-documented technical arguments.

*A very useful two page "Technical Evaluation Model" is included for your review in figure 5-1.

5.3. Providing a range of positions in your technical evaluation.

5.3.1. Some say three positions (MINIMUM, MAXIMUM, AND OBJECTIVE) should be provided; some say just two (MIN/MAX) only. Within your organizational regulations or accepted practices, this is usually defined. The real point is a range of "reasonableness" should be provided to establish cost objectives and allow the negotiator room to move from an initial negotiating position.

5.3.1.1. What is a minimum/maximum position? This question has come up in several discussions. There's no perfect answer. Suffice to say a minimum position would be that amount which you feel the job could be done for if *most* things go right. A minimum position is still realistic, though optimistic. Conversely, a maximum is that amount to do the job if *most* things go wrong. The *most* denotes that we the customer, expect the contractor to anticipate most problems and minimize their impact. If we pay a price based on everything going wrong, we're probably doing business with the wrong guy. Another way to think about min/max positions are that they represent different positions based on the "risk" a contractor has in being able to do the required task. Minimum positions assume small risk. Maximum positions assume greater risk if that risk is justified. Examples of some types of risk are: *technical risk: type* and complexity of the item, design stability and prior production experience; *schedule risk:* period of performance, extent of subcontracting, labor force stability and material availability; and *estimating risk:* availability of history,

adequacy of the accounting system and quality of the estimator. You may wish to consider these and other risks when you do your evaluation.

5.4. The IPT "Technical Evaluation."

5.4.1. The area where IPT pricing really differs from conventional proposal analysis is the technical evaluation. There is no technical evaluation in the purest sense of the word under IPT pricing. That is because the government and contractor functional team members are empowered to make agreements on what the proposed hours are going to be when the formal proposal is submitted or the current one is revised.

5.4.2. It is important that the IPT team members clearly document any agreements on tasks or costs (labor hours, material, etc.) as those agreements occur. The agreement sheets are usually of a prepared form that the contractor and government team leaders have established. The documented agreements should be signed and dated by both government and contractor personnel empowered to make the agreements. This will avoid the potential for later misunderstandings that may delay final settlement and contract award. A statement of the basis of the proposed hours and why they are considered reasonable is helpful, but usually not mandatory.

5.4.3. Contrary to some thinking, full government participation in an IPT to develop a proposal and to negotiate a contract can be very labor intensive, especially early on in the process. It can be more time consuming and strenuous than preparing a written technical evaluation in many cases.

5.4.4. Because of the labor resources required for a formal, beginning-to-end IPT pricing effort, the SPO should consider some modified process for teaming on smaller dollar efforts. Expanded use of Video Tele-conferencing and/or electronic access to the contractor's preliminary basis of estimates have been helpful in providing the government team members with needed information, while reducing travel costs and time in the contractor's facility.

Figure 5.1. Technical Evaluation Model.

[1] SUMMARY TECHNICAL EVALUATION
(ALL DIRECT LABOR FUNCTIONS)

COST ELEMENT	[4] PROPOSED	[2] AF LOW	[2] AF HIGH	[8] NOTES
LABOR HOUR		[5]		
ENGINEERING	[7] 63,805	56,786	59,147	(1)
ENGR-PLANNING	500	400	450	(1)
ENGR OFFSITE	7,500	6,000	6,750	(1)
[4] [5] FAB AND ASSY	28,000	27,000	27,500	(2)
TEST	12,000	11,500	11,750	(2)
TOOLING	1,000	650	750	(2)

NOTES:
(1) Engineering hours are evaluated in SPO Engineering Technical Evaluation which is attached.

(2) Manufacturing hours are evaluated in SPO Mfg/QA Technical Evaluation which is not included in this example.

DISCUSSION:

[1] This is a Summary Technical Evaluation which combines the inputs of numerous other functional tech evals. It covers all the direct labor elements. It should be prepared by the evaluation team leader, normally the program manager.

[2] Notice there are two recommendations, AF low and AF high. This is highly desirable as opposed to recommending just one number. This is discussed in more depth section 5.4.

[3] This is a functional technical evaluation that covers engineering. The AF Engineer team leader may have put this together after receiving technical recommendations from several other engineers or it may have been done by one person. Notice the lower level WBS elements evaluated and how it summarizes back to the total proposed, 63,805 engineering hours.

[4] Clearly state what proposed cost element, function or task is being evaluated and what the proposed hours are for that task.

[5] Clearly state what cost element, function or task is being evaluated and what your recommendation is against each cost element, function or task.

[6] Include page numbers and/or WBS elements to further assist Buyers or Price analyst in tracking and understanding your evaluation exceptions.

[7] The total of all the lower level engineer task hours being evaluated (63,805) matches the engineering hours proposed. This is a little redundant to 3 ,but this point cannot be overemphasized. Don't just pick something and evaluate one piece and not relate it to the total. If the example evaluation for Manufacturing had been included, it should evaluate all the lower level fabrication and assembly task which total to the entire proposed amount of 28,000 hours.

"ALWAYS SHOW HOW YOUR RECOMMENDATIONS FIT INTO THE TOTAL"

[8] Note/statement cross reference to provide related in depth discussion and arguments.

[9] Explanations for why each exception was taken are the critical part of your technical evaluation. Without good explanations, negotiators don't stand a chance against the contractor's negotiating team. It's like going to war with a gun and no bullets.

Figure 5.1. Technical Evaluation Model. (Cont)

ENGINEERING TECHNICAL EVALUATION

Proposal Page No	WBS	Task Description	PROPOSED	AF LOW	AF HIGH	NOTES
		Engineering Labor				
20	4110	- Sys Integration	24,520	23,500	24,000	(1)
25	4210	- Subsystem A	2,023	636	1,800	(2)
30	4310	- Subsystem B	2,875	2,875	2,875	(3)
35	4410	- Subsystem C	7,427	7,137	7,137	(4)
40	4031	- Oper Analysis	6,718	5,021	5,718	(5)
45	4064	- Project Management	20,242	17,617	17,617	
		Total Engineering Labor	63,805	56,786	59,147	(6)
50	4050	Engineering Planning Labor	500	400	450	(7)
55	4510	Engineering Offsite Labor	7,500	6,000	6,750	(8)

NOTES:

(1) Proposed is based on 50% turnover of critical skills. Eng position is 50% turnover is excessive. Minimum: Based on using 12.5% turnover, same as non-critical skill. Maximum: Use 25% turnover, judgment.

(2) Proposed assumes five subsys failures. Not justified by history. Minimum: Use one failure – judgment. Maximum: Based on three failures -- same as contract -0918 experience.

(3) Accepted as reasonable. Proposal based on 1990 actuals which are reasonably projected for this task.

(4) Contractor proposed hours for test battery. Not required per SOW.

(5) Proposed is based on entire analysis task. Portions are covered under the basic contract. Minimum: Delete all analysis support hours. Maximum: Delete only analysis data report.

(6) Proposed is based on 12 months of cost to complete (CTC) level of effort (LOE). Projected completion in 9 months. Min and Max both based on 9 months CTC.

(7) Proposed is based on a ratio to total engineering hours. Ratio to total engineering hours excessive based on history. Minimum 1989 ratio, Maximum is 1990 ratio.

(8) Proposed is based LOE using 1990 actuals. There were six launches in 1990. Amount is excessive based on number of launches projected (two for 1991). Minimum: Delete one person duration for launch period. Maximum: Delete one person for half the launch period.

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